



Exchange Traded-Funds: Synchronizing Information and Noise in Capital Markets

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ABSTRACT

Exchange-traded funds (ETFs) have colonized pretty much every available niche in the investment world— frequently at the expense of traditional vehicles, such as mutual funds and hedge funds. And the land grab has apparently just begun. This means it is time to start thinking about unintended consequences. One of history's clearest lessons is that when financial innovation really gets going it tends to race ahead of regulators, who only catch up after an idea has revealed its dark side in some painful, sometimes system-threatening fashion. And while ETFs have not reached the rarified heights of, say, mortgage backed securities; they are raising a few red flags.

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1. Introduction

Financial institutions are constantly designing and marketing innovative financial products that promise to meet investors' return expectations as market conditions and global risk appetites change. In the low global interest rate environment of 2002 and 2003, qualified banks, dealers, and special purpose vehicles (SPVs) packaged and sold structured credit products to institutional investors to gear up investment returns as the value of their liabilities increased. Banks were also willing buyers because these products offered higher returns to comparably rated plain vanilla assets. Rising investor demand for these products later helped banks to fund the rapid growth in credit demand between 2004 and 2006 through the securitization structures that support these products.

Interest in structured credit products decreased as a result of the financial crisis of 2007–2008. Yet, the low global interest rates that supported growth in structured credit products returned in the 2010s with institutional investors facing similar problems to those in 2002 and 2003. This time, however, financial intermediaries responded by adding some innovative features to existing plain vanilla investment funds, marketed under the name exchange-traded funds (ETFs). These funds emerged in the early 1990s as a cost- and tax-efficient alternative to mutual funds. ETFs essentially replicated the underlying index exposure gained by buying the physical stocks or securities in the index. Investors looking for alternative investment vehicles to structured products turned to ETFs as flexible and transparent investment products that can be traded as stocks on an exchange.

Financial intermediaries typically respond to informed investors by packaging innovative products to satisfy their risk appetites. The dealer incentives to seek alternative funding sources to comply with the liquidity coverage ratio (LCR) standard under the Basel III Accord may drive some product innovation for better assessment of liquidity risk across all on and off balance sheet items. Liquidity coverage ratio limits overreliance on short-term wholesale funding during times of vibrant market liquidity. Certain product structures might facilitate run-off rates on liabilities short, which decreases their notional value from prepayments to arbitrageurs. As a result, ETFs have evolved from being plain vanilla, cost- and tax-efficient alternatives to mutual funds to become a more complex and diverse array of products with varying replication schemes (Cano, Feldman, and Smith 2009).

The purpose of this chapter is to examine these investment vehicles from inception to the present and their prospects for the global investment scene. The remainder of the chapter is

organized as follows. The next section explores the evolution and structure of ETFs followed by a discussion of the positive features of these instruments including flexibility, intraday trading, and efficiency. Next, the chapter explores their limitations such as encouraging short-term speculation and targeting niche markets without a track record. The next section examines ETF growth prospects and strategies of product launches such as partnering with an established issuer. ETF performance is then discussed based on empirical data on ETF trading within America, Europe, Asia-Pacific, and other regions through January 2014. The final section concludes and presents directions for further research.

2. Evolution and Structure of Exchange-Traded Funds

An *ETF* is a type of fund structure that issues shares tradable on a stock exchange at a market determined price throughout the day in the same manner as common stocks. Each ETF pool contains the assets of multiple investors and invests the funds according to its investment objective. ETFs offer investors a diversified exposure to financial assets across geographical regions, sectors, or asset classes. ETFs are traded through brokers on a commission basis through market, limit or stop orders. Their shares can be purchased on margin and also can be shorted (Agapova [2011](#)).

Early Development of Exchange-Traded Funds

On Friday, January 22, 1993, the first ETF started operating by issuing 150,000 shares to be traded on the American Stock Exchange (AMEX). These shares, known as Standard & Poor's Depository Receipts (SPDRs, which is pronounced "spiders") represented ownership interests in an investment trust that held a portfolio of shares of common stock comprising all companies in the S&P 500 index in substantially the same proportion as the index. The fund had no affiliation with Standard & Poor's but acknowledging the importance of the S&P 500 index in the broader stock market, licensed the right to use the index's name and composition. Any investor who purchased SPDRs would, in a single share, be invested in the entire S&P 500 index, and the value of SPDRs would fluctuate with the rise and fall of the S&P 500 index (Birdthistle [2011](#)).

In 1924, Massachusetts Financial Services (MFS) created the first mutual fund, Massachusetts Investors Trust (MIT), to provide similar opportunity for individuals to invest in a broad swath of diverse securities through a single vehicle. MIT solicited investments from shareholders for shares in the fund. Using those investment proceeds, MFS, the fund's adviser, purchased a portfolio of underlying securities for the fund. As with shares of ETFs,

the price of shares in MIT increases (decreases) as the aggregate value of the fund's underlying portfolio rises (falls). The critical difference between an ETF and a mutual fund involves how they price their fund shares. Mutual funds are priced just once daily after the close of business. The fund's investment adviser calculates the value of the fund's portfolio by multiplying the number of shares of each of the securities it owns by the respective closing prices of those shares. This aggregate product of the portfolio is then added to any cash or other assets owned by the fund, while liabilities such as fees owed to the adviser or other service providers are subtracted.

The resulting sum is then divided by the total number of shares issued by the mutual fund to calculate the net asset value (NAV) of a single fund share. Waiting until the price of each portfolio security has ceased to fluctuate for the day makes this computation much easier. Although mutual fund advisers find this method administratively easy, fund investors have some reservations because it encourages market timing and fair valuation for illiquid assets to the advantage of fund advisers keen on improving their expense ratios.

Recognizing both the appeal of mutual funds as pools of diversified investments and their pricing limitations, Nathan Most, an AMEX employee, developed the mechanisms used by the first ETF (Laurent 2008). When developing SPDRs, Most, sought to provide investors with an opportunity to invest in a diversified investment vehicle via shares that traded at accurate prices throughout the business day. To do so, he introduced *creation units*, which are large blocks of ETF shares denominated in groups of 50,000 shares or greater that an ETF issues and redeems to investors. Only large institutional investors and brokerage houses can buy and sell such wholesale bundles of investments worth millions of dollars. An investor must enter an agreement to become an authorized participant (AP) in the fund to gain eligibility to trade directly with an ETF.

Unlike mutual funds, ETFs do not sell and buy their creation units for cash. Instead, they require that these large institutional APs barter in-kind baskets of portfolio securities for the creation units. Any AP wanting to acquire a creation unit must therefore provide a portfolio deposit equal in value to the NAV of all the ETF shares in the creation unit. For example, to buy a creation unit of SPDRs, an AP would need to provide a portfolio deposit comprising a representative collection of investments in the S&P 500 index. The transaction is reversed when an AP wants to redeem ETF shares. The AP must assemble the ETF shares into creation units and then present them, bundled accordingly, to the fund for a redemption basket of the fund's underlying securities.

Thus, cash rarely changes hands directly in the purchase and sale of ETF shares between the fund and its largest investors (i.e., the APs). Once institutional APs buy blocks of ETF shares in these initial transactions with ETFs, they may then resell them on a securities exchange in a secondary transaction to retail investors at a transaction fee (Kosev and Williams 2011). For the retail investor, shares in an ETF may operationally behave in ways similar to shares of an operating company.

Trading ETFs

One of the four primary benefits of ETFs is its intraday liquidity. Investors with a short holding period i.e. less than a day may favour an ETF over a mutual fund. A mutual fund cannot be purchased or sold intraday. The authorized participant creates and redeems units of an ETF. APs, along with the liquidity providing community (e.g. broker dealers, banks, and trading desks) are typically the screen markets (bid and ask quotes) on the exchange. Comparing this process to a typically stock transaction on an exchange, they place a bid to buy, which is matched with an offer to sell. Therefore, a trade occurs when prices match on the same exchanges.

With this stock trade, the screen market shows buyers and their bids with sellers and their offers. Conversely, an ETF transaction trades with an extra layer of complexity. This extra layer uses the assistance of the APs or liquidity providers including the institutional trading community. The bids and offers observed on the ETF trading screen are not always buyers and sellers, but rather, they represent markets where liquidity providers and APs buy and sell the ETF with the size shown on the screens. This extra layer is important because liquidity providers are typically taking the other side of the trade. As additional market participants join, competition increases and allows the investor the potential for a lighter spread and a more efficient transaction. The increased level of competition limits the possibility of arbitrage.

Screen liquidity is the available price and depth observed on the collective screens. As expected, liquidity, highly liquid ETFs see high trading volume and deeper markets. Only a small percentage of the ETFs are trading vehicles while the majority of ETFs are investment vehicles. Trading vehicles are the actively traded ETFs e.g., SPY, GLD and IWM that trade at very high average daily volume levels, which are typically in the millions of shares. Investment vehicles are ETFs that do not have very high average daily volume and represent

the balance of available ETFs. These ETFs might have high underlying liquidity, which can be accessed, but flow screen liquidity because of a lack of daily screen trading volume.

In short, volume does not equal liquidity. Daily volume is the number of shares that trade in a particular day. ETFs are only as liquid as their underlying constituents. Hence, ETF liquidity equals trade capacity. When the screen market shows a wide bid-ask spread and low trading volume, it does not mean the ETF is illiquid but shows low volume. ETF liquidity can be found by placing liquidity providers and APs in competition with each other. This process is typically performed at the institutional level when a large institution takes a client's order and shops it around the street to large dealers.

A wide bid-ask spread and small size on the screen can easily become a narrow spread with large size as market participants are competing for order flow. Such a trade typically occurs over the phone, and when a price and quantity are agreed upon, a trade is placed on the tape similar to a normal stock trade. Institutions refer to this process as using the *upstairs trading* which is a secondary source of liquidity beyond the screens. The cost of trading an ETF can vary. First, one important factor is the expense ratio, which the ETF sponsor takes from the fund on a daily basis. The expense ratio is fund operations. Another cost of trading an ETF is the premium or discount at which the ETF could trade during the trading day. A premium or discount occurs when the ETF deviates from its intraday NAV. ETFs have an inherent arbitrage mechanism built in because market makers and APs can capitalize on this deviation from an ETF's true underlying value.

When an ETF trades above its NAV, it trades at a premium. Correspondingly when an ETF trades below its NAV, it trades at a discount. Although this might be a large spread, arbitrageurs seek to capitalize on this opportunity effectively keeping the spread small. With this inherent arbitrage mechanism, traders who attempt to exploit this potential arbitrage opportunity minimize this spread. A third cost is the spread, which is the difference between the bid and ask prices. For example, suppose an ETF has a spread of 6 cents (\$ 50-50.06), implicitly assuming the fair value or NAV is \$ 50.03. In this situation, the investor bears an additional cost to transact at non NAV prices. If the investor pays the offer of \$ 50.06, this has the investor purchasing the ETF at 3 cents above its fair value or NAV. After buying the ETF, if the investor chooses to immediately sell it at \$ 50 (the screen bid), then the investor would suffer a round trip loss of 6 cents (i.e., the investor paid \$ 50.06 and sold at \$ 50).

This example illustrates that timing, trading and prices can impact investment returns. Having the ability to dictate and control the holding period is an added benefit for ETFs. Investors use ETFs for many purposes for long term investment vehicles to short term daily trades.

3. Replication Methods

Not every ETF replicates the exact composition of its benchmark index. Instead a fund sponsor may try to track the index using only a representative sample of the securities in that index. Such sampling strategy comes with greater flexibility and cost-effectiveness but at a compromised perfect accuracy. If an AP can pay less for 50,000 SPDRs trading on a stock exchange to assemble a creation unit than to acquire all the underlying S&P 500 index stocks required in a portfolio deposit, then the AP can make quick profit by buying the 50,000 SPDRs and redeeming them with the fund for redemption basket of S&P 500 index securities on a stock exchange for cash. Conversely, if the S&P 500 index stocks are trading at prices lower than the SPDRs, the AP can make a quick profit by purchasing the S&P 500 index stocks required for a portfolio deposit and trading them to the ETF for a creation unit, and then selling the 50,000 ETF shares in that creation unit on a stock exchange for a higher price.

ETFs indexed to equity and fixed-income benchmarks are registered under the Investment Company Act of 1940 and classified under open-end funds (OEFs) or as unit investment trusts (UITs). This U.S. legislation permits only physical index replication techniques does not permit synthetic replication. ETF sponsors do not sell shares directly to investors but issue them in large blocks called creation units to APs who effectively act as market makers (Kosev and Williams, 2011). Investors then buy or sell individual shares in the secondary market on an exchange based on the fund's NAV without attracting subscription or redemption charges.

In the primary market, ETFs redeem creation units to APs through securities that comprise the ETF rather than through cash. The limited ability of ETFs to redeem shares in the United States distinguishes them from mutual funds. This feature differs from ETFs issued in Europe where they can be established under the Undertakings for Collective Investment in Transferable Securities (UCITS). The UCITS are a set of European Union (EU) directives that aim to allow collective investment schemes to operate freely throughout the EU on the basis of a single authorization from one member state. Both physical and synthetic index replication is permissible by UCITS and funds.

In the early phase of the development of the ETF industry, index replication was done through plain vanilla structures involving buying all the underlying securities comprising the index. Subsequent changes involved replicating the index by holding an optimized basket of the underlying securities in the index and generating additional income by lending out the securities. In the United States, this process involved organizing ETFs as OEFs rather than as UITs because UITs do not permit securities lending. Almost all ETFs benchmarked against fixed-income or equity indexes in the United States are plain vanilla structures involving physical replication of the underlying index. In Europe about 50 percent of ETFs are plain vanilla types and the rest are replicated using synthetic structures.

4. Regulatory Requirements

Regulatory structures that stipulate how ETFs are managed in the United States encourage adopting plain vanilla structures. One requirement, which became operational in July 2002, requires that investment companies registered under the Investment Company Act 1940; including ETFs hold at least 80 percent of their assets in securities matching the fund's name. Another requirement is the notification by the U.S. Securities and Exchange Commission (SEC) in March 2010 to review the use of derivatives to achieve their investment objectives (Securities and Exchange Commission [2010](#)). UCITS regulations applying in Europe permit exchange-traded and over-the counter (OTC) derivatives to be held in a fund to meet investment objectives. This UCITS framework has also been adopted in Asia and other emerging markets with more than 70 percent of authorized funds in Hong Kong and Singapore now being UCITS compliant. But a substantial share of ETFs benchmarked to emerging markets assets are domiciled in Luxembourg and Dublin and are UCITS III compliant. UCITS III, adopted in 2001, is a version of EU regulations governing the creation and distribution of pooled investment funds including mutual funds and ETFs. It extended eligible assets to include money market instruments, derivatives, units of other funds and financial indexes. This arrangement may be related to greater European institutional demand for exposure to these asset classes.

5. Synthetic and Exotic Structures

Synthetic ETFs allow replication of the index using derivatives as opposed to owning the physical assets to reduce costs. If the index has a narrow regional or sector focus and is widely traded, replicating the ETF benchmark can be cost-efficient. However, physical

replication can be an expensive method for tracking broad market indexes such as emerging market equity or fixed-income indexes, or other less liquid market indexes.

In less liquid markets, the wider bid-ask spreads increase replication costs, particularly when the fund has high turnover. These considerations led to using synthetic structures to replicate the ETF benchmark. One popular structure involves using total return swaps, which ETF sponsors refer to as the *unfunded swap*. In a total return swap, the swap counterparty exchanges index returns for a basket of collateral returns with the ETF sponsor who exchanges cash for a basket of stock from counterparty. Under the synthetic replication scheme, the APs receive the creation units from the ETF sponsor against cash rather than a basket of the index securities as in physical replication scheme. The ETF sponsor separately enters a total return swap with a financial intermediary, often its parent bank, to receive the total return of the ETF index for a nominal exposure. For example, assume an Australian company has AU\$200 million in revenues, which translates to about \$100 million in U.S. dollars. It has \$50 million of costs denominated in U.S. dollars. The nominal exposure to the Australian/U.S. exchange rate is \$100 million less \$50 million, which is \$50 million. This exposure makes up the first leg of the swap.

Cash is then transferred by the ETF sponsor through a custodian to the swap counterparty equal to the notional exposure, equal in value to the payoff required to counter risk of financial loss. Such counterparty risk could lead to broad industry run thereby threatening financial stability (Baba, McCauley, and Ramaswamy 2009; Bank of England 2010; Financial Stability Board 2011). In return, the swap counterparty transfers a basket of collateral assets like shares representing a collateral pledge to the ETF sponsor. The assets in the collateral basket could differ completely from those in the benchmark index, which the ETF replicates. The total return on this collateral basket is then transferred from the ETF sponsor to the swap counterparty, which constitutes the second leg of the total return swap.

Some structures use multiple swap counterparties for the transaction. The composition of the assets in the collateral basket can change daily as the swap counterparty recycles its inventory. Being the beneficial owner of the collateral basket, the ETF sponsor can sell the collateral assets if the swap counterparty defaults and repays the investors. Under UCITS regulation, the daily NAV of the collateral basket, which can include cash or equities and bonds of the Organization for Economic Cooperation and Development (OECD) countries including the United States, the United Kingdom, Germany, and Switzerland, should cover at least 90 percent of the ETF's NAV. This limits the swap counterparty risk to a maximum of

10 percent of the ETF's market value. Assets in the collateral basket are eligible for securities lending. Secured lending is usually done through a custodian who is responsible for the safekeeping of assets, trade processing, and settlement and clearance.

6. Funded Swap Structure

An alternative replication strategy used by ETF sponsors is to employ a *funded swap structure*. Under this format, the ETF sponsor transfers cash to the swap counterparty that then provides the total return of the replicated ETF index. This transaction is collateralized, with the swap counterparty posting the eligible collateral into a ring-fenced custodian account to which the ETF sponsor has legal claims. *Ring fencing* involves keeping a client's account with a custodian, usually an AAA-rated financial institution, separately from the ETF sponsor's other assets for enhanced protection of client funds. But unlike in the unfunded swap structure, the sponsor is not the beneficial owner of the collateral assets. *Beneficial owners* are investors engaged in lending their portfolio assets on a short-term basis to generate incremental revenues collateralized at 102 or 105 percent thereby reducing the lenders credit exposure to the borrower.

This structure might lead to delays in realizing the value of collateral assets if the swap counterparty fails. A bankruptcy administrator can freeze these assets even when they are held in client accounts (Fender, Frankel, and Gyntelberg 2008). The collateral composition and the extent of minimum collateralization must comply with the UCITS regulation. Usually this transaction is over collateralized by 10 to 20 percent leaving the counterparties with adequate protection in case of security price fluctuations. Securities lending is permitted. This structure is less commonly used by sponsors for synthetic replication of ETF indexes.

The transaction can be separated into buying a credit or equity linked note from a financial Intermediary and then mitigating the counterparty risk by requesting collateral posting that is UCITS compliant. A *credit linked note* is a security with an embedded credit default swap allowing the issuer to transfer a specific credit risk to the credit investor who buys securities from a trust collateralized with securities paying a fixed or floating coupon during the life of the note. The ETF sponsor buys a structured note secured by a collateral pledge. Synthetic replication is common with commodity ETFs.

But in these markets, a lack of sufficient diversification of assets in the index prohibits using the mutual fund structure. As a result, exchange-traded products that provide exposure to

commodities use other trust structures and are marketed as exchange-traded commodities (ETCs). While some sponsors use physical replication of some commodity indexes, such as gold and copper, synthetic replication using futures or forward contracts is common.

The increased demand for ETF products has brought with it product complexity and aggressive risk profiles. More exotic products known as leveraged ETFs delivering returns in multiples of the daily performance of the index have been introduced into the market. Conversely, leveraged inverse ETFs deliver a return in multiples of the inverse performance of the underlying index.

ETF sponsors usually emphasize the swap-based replication schemes to deliver the investment performance of mimicked exposures. Investor's exposure is more similar to buying or selling an Asian option where the payoff is determined by the average underlying price over a pre-set time period rather than a European option in which the payoff on the underlying index is determined on a single predetermined date.

7. Motivation for Synthetic Replication

Synthetic replication schemes transfer the risk of any deviation in the ETF's return from its benchmark to the swap provider, which is affected by entering a derivatives contract to receive the total return of the benchmark (Committee on the Global Financial System 2005, 2008). This structure protects investors from the tracking error risk, arising whenever a disparity exists between the returns of the underlying index and the returns of ETF shares. The lower tracking error risk comes at the cost of increased counterparty risk to the swap provider. The increased popularity of ETF products among investors has led to greater competition among ETF sponsors, forcing them to seek alternative replication techniques to optimize their fee structures.

One outcome of this fee structure review has been to explore the scope for possible synergies that might exist between the investment banking activities of the parent bank and its asset management subsidiary. These synergies arise from the market-making activities of investment banking that require maintaining a large inventory of stocks and bonds that has to be provided. By transferring these stocks and bonds as collateral assets to the ETF provider sponsored by the parent bank, the investment banking activities may benefit from reduced warehousing costs for these assets. Part of this cost-savings may then be passed onto the ETF investors through a lower total expense ratio for the fund holding. Table 25.2 compares two synthetic replication schemes: a funded swap

8. Positive Attributes of Exchange-traded Funds

Financial innovation is mostly driven by inadequacies of current instruments' failure to satisfy investor requirements. ETFs are a market response to inadequacies of mutual funds' forward pricing, market timing, fair valuation, and hidden management fees. They offer investors flexibility in their transactions as discussed in this section.

Flexibility and Exchange Trading

ETFs are attractive to traders because of their ability to trade in the same manner as a security throughout the business day at real time prices on a stock exchange. The limits of mutual funds' system of forward pricing means investors cannot react to negative news occurring during a trading day. In contrast, ETF investors can react immediately to positive or negative news by buying or selling their ETF shares. They can exert control over the purchase and disposition of the holdings in their portfolios by placing market, stop, or limit orders on their ETF shares. ETF benefits include the ability to short against movements of broad market indexes, hedge against the performance of other holdings in their portfolio, and purchase shares on margin.

Investment Option

The intraday pricing feature allows investors to time market movements to bet on upward or downward swings in stock exchanges. Similarly, institutional investors holding uninvested cash during periods between investment activities may choose to equitize that cash by using ETF shares to invest the funds in broad market indexes for short periods of time. ETFs provide exposure to derivatives, futures, commodities, currencies, and preferred stock. This allows investors to construct a core and satellite portfolio, purchasing passive and broad-based ETFs in a diverse pattern of asset allocation as the portfolio's core, while choosing more specialized niche ETFs as a satellite to boost portfolio performance.

Efficiency and Costs

Unlike mutual funds, especially actively managed funds, ETFs suffer few of the transaction costs associated with the turnover of portfolio securities. Mutual funds must process all the purchases and redemptions of every single investor in their fund, large or small. Those transactions generate substantial costs associated with shareholder record-keeping and managing accounts. Conversely, ETFs conduct far fewer large scale transactions, with investors wealthy and sophisticated enough to traffic in creation units, portfolio deposits, and redemption baskets. All other transactions involving ETF shares take place on secondary

stock exchanges and therefore do not generate expenses that the fund must bear. ETFs can operate with far lower cash reserves on hand compared to mutual funds because ETFs do not redeem their shareholders in cash but rather in kind through redemption baskets of portfolio securities.

Tax Advantages

An ETF grows primarily through the accretion of in-kind portfolio deposits of underlying securities from investing shareholders and then redeems those shareholders by returning securities in redemption baskets. Unlike mutual funds, ETFs rarely, if ever, alter investment strategies and therefore seldom require direct purchases or sales of portfolio securities. If any of the securities contributed by investors to an ETF experience substantial appreciation while owned by the fund, the fund can redeem its securities to rid itself of those with the highest potential unrealized capital gains first.

So ETFs incur comparatively few taxable purchases and sales of securities and pass fewer capital gains liabilities to their shareholders (Huang and Guedj 2009).

9. Limitations of Exchange-traded Funds

The rapid development of ETFs starting in 1993 has been both a blessing to investors and a curse to short-term speculative traders. The speculators constantly watch the dynamic market and want to gain from price changes. Such regular daily transactions are costly as discussed in this section.

Sort-term Speculation

Bogle (2004), the founder of Vanguard, concludes that if long-term investing was the paradigm for mutual funds, trading ETFs can only be described as short-term speculation allowing intraday trading, which attracts brokerage fees and financial transaction tax on every transaction. Emotions encourage performance-chasing investors to become their own worst enemies as they interpret public information (Spence, 2007).

Mutual funds suffer from their architectural weaknesses, which permit market timing, late trading, unfair valuation, and hidden fees and expenses. ETFs have potential risks because the ability to trade ETFs continuously may tempt rapid and unsuccessful day trading by overly optimistic retail investors (Benz 2011).

Saturation and Niche Volatility

When only a few companies operate in a particular investment sector, ETFs and other investment funds attempting to invest in that sector may drive the price of those companies artificially higher. This dynamic occurs not because of faith in the value of any particular company, but because of the need to hold those shares in the fund. Also, creating ETFs to track the value of commodities such as silver and gold has driven up the price of the underlying commodities (Costa 2011). The securities of esoteric investment niches, such as foreign issuers or micro-cap companies, are likely to be traded with thin volumes and therefore susceptible to the volatility of dramatic price swings.

Lack of a Track Record

Any ETF sponsor incapable of providing a concrete record of results over a long operational period is offering a promise of its ability to deliver returns to the investor without a demonstrable business model over time. Morningstar rates funds that have operated over three years. Only after viewing several years of results will an investor have a realistic sense of a particular fund's management expertise and appreciate the difference between theoretical indexes and actual investment results.

Tracking Error

ETFs fail to adhere reliably to the index to which they are supposedly benchmarked for various reasons. First, a fund may replicate the entire composition of its underlying index or use a representative sample of index securities in its portfolio. Second, currency fluctuations may create a disparity in returns for a benchmark comprising foreign stocks if the fund itself is denominated in U.S. dollars. Third, the costs that a fund incurs create a differential drag on its performance. Thus, transaction costs, custody costs, foreign exchange impact of investing in overseas securities, and differences in the timing of dividend payments affect tracking error.

10. Retail Distribution and Growth Prospects

ETFs need to be promoted and sold without negatively affecting its investors. Market makers in the United States and Europe are focusing their promotional efforts on asset managers and private wealth managers. Promoters with in-house wealth managers have an upper hand in terms of identifying a specific index to track, composition of creation units, approval of creation orders, dividend payments as well as trade execution of the underlying securities through this valuable distribution channel because their expense ratio includes management

fees instead of reporting them separately. Thus, they act as a one-stop shop for ETF transactions. In turn, this translates into lower fees to their clients.

Education alone will not create a culture of ETF investment. Independent advisers and investment platforms will be crucial to unlocking retail growth because the advisers are no longer only engaged in stock selection for the client but are offering tactical asset allocation advice in which they charge an asset-based management fee for access to low-cost vehicles.

11. Tax Implications of Trading

ETF participants must consider tax-related issues with their investments. In Europe, the financial transactions tax, which became effective in early 2015, alarms some investors more than any other regulatory initiative as it assumes that the pass through of the tax from traders to investors is close to 100 percent including any intermediate transaction (Oxera 2011). The financial transaction proposes to impose a levy on every financial transaction undertaken by market participants, which directly hurts speculators keen on betting on price changes through intraday trading. Trader-oriented investors fail to correctly time the market leading to poor investment outcomes thereby destabilizing capital markets (Barber and Odean 2000; Zweig 2011).

12. Service Providers

Service providers supply the infrastructure that promoters and traders need to uphold their promises to investors. Asset providers are expected to act as enablers for the further development of ETF markets, which should lower costs, improve liquidity, and help meet complex tax and regulatory reporting requirements. The liquidity of ETFs and the degree of automated trading in the market contribute to the complexity of ETF support. Cross-listing is a complication in the fragmented European market, while local regulations in Asia-Pacific often require service providers to develop separate systems in every market (Amihud 2002). Promoters and market makers need to recognize that developing a new fund is often quicker and easier than developing the administrative platforms required functioning effectively.

13. Future of Exchange-traded Funds Industry

For this financial innovation to achieve growth potential, the ETF industry should focus on the following variables:

Education

A need exists for public–private partnerships among regulators, service providers, and academic institutions to implement financial literacy programs to the investing public to ensure that more informed choices are made and to help decision-making by distinguishing between noise and information in the capital markets. *Noise trading* occurs when short-term speculators trade irrationally based on herd behavior of buying and selling what others are doing. Trading on information involves purchasing material data to be analyzed before a transaction occurs. Noise keeps security prices in check, whereas buying pertinent information can yield superior returns. Both noise and information co-exist to make capital markets functional. Success in educational efforts will better ensure that trading volumes will be commensurate with the level of economic activity. The Asia-Pacific region is a huge market with an ever-expanding middle class in China, India, Singapore, and Hong Kong that needs to bring on board institutional investors to enjoy their trading volumes in order to boost its position in the emerging markets category.

Communication and Distribution.

The ETF industry needs to speak with one voice when communicating with regulators, legislators, tax authorities, and other stakeholders.

To achieve effective and efficient distribution, formal engagements are needed with a range of partners to develop infrastructure conducive to both retail and institutional channels.

Innovation

A need exists to put in place ceilings on financial innovations that could be sold to potential investors. Finance houses on the sell side want to develop new products that circumvent regulatory barriers to satisfy unsuspecting potential investors. These ceilings could curb systemic and reputational risks so that fund strategies and structure vulnerability can be mitigated at short notice to check on contagion and industry runs. For this change to be effective, industry regulators need to monitor the activities of industry players and to curb the sale of inadequate products to noise traders. This monitoring is particularly important because product growth leads to complexity calling for advanced management of regulatory and tax issues. Cross-border listing requires establishing a professional body dedicated to devising shared approaches to common ETF issues in a collaborative manner.

Collaboration and Co-operation

A need exists for a centralized clearing system to enable cross-border settlements particularly in the fragmented European market. This change will harmonize regulatory requirements and boost growth. Additionally, creating a professional industry body dedicated to devising shared approaches to common ETF issues is essential.

14. Evaluating Exchange-Traded Funds

Various metrics are available to investors to evaluate an ETF. Depending on the type of investor, the importance of these metrics may vary.

Performance

Various studies find little or no evidence of predictive power of past performance on future performances (Sharpe 1966; Jensen 1968). However, investors may want to evaluate an ETF's performance against its stated objective or benchmark. A simulation of risk-adjusted returns from 1994 to 2009 shows that the Research Affiliates Fundamental Indexation (RAFI) Composite index would have returned a 12.9 percent annually with a volatility of 15 percent, whereas the Morgan Stanley Capital International (MSCI) index would have returned only 9.9 percent with a higher volatility of 15.5 percent (Costa 2011). Rational investors are guided by the risk-return trade-off and are risk-averse. With almost the same risk level, a rational investor would select the RAFI Composite return of 12.9 percent, which is higher than the MSCI return of 9.9 percent. For an index based ETF, an ETF's tracking error serves as a performance measure. When evaluating an actively managed ETF, investors might look at how the ETF has performed relative to its stated benchmark. Any deviation from the two returns could be because of fund manager portfolio rebalancing, management fees, and industrial stability.

Cost

Investing in an ETF involves various costs such as fees charged by the ETF sponsor, brokerage commissions, and account fees associated with receiving financial advice. But ETFs suffer few of the transaction costs associated with the turnover of portfolio securities common with actively managed mutual funds because large institutional APS buy their shares in substantial amounts of creation units. Few purchases are enough for portfolio construction thereby attracting low management fees compared to mutual funds. For example, Lyxor ETF World Water, which is tradable in Switzerland, Italy, the United Kingdom, France and Germany, had assets under management (AUM) of Euros 81.5 million

but a total expense ratio of 0.6 percent in 2011. By contrast, Swisscanto (LU) Equity Fund Water Invest, which is tradable in Switzerland, Germany, Australia, and Luxembourg, had AUM of Euros 117.83 million but a total expense ratio of 2 percent in 2011. This large difference exists despite both ETFs investing in water treatment and technologies.

Premiums and Discounts

Although ETF shares trade on the secondary market at a price that approximates the market value of their underlying assets, their market price may sell at a premium (higher) or a discount (lower) to the estimated market value of their underlying assets.

Although the prices of commodities such as gold do not fluctuate like bonds and equities, such products are prone to be traded at premium prices further increasing their prices in the secondary markets. By contrast, energy products are volatile and might be sold at a discount when their prices are falling to induce investors to trade them. By tracking which asset classes attract premiums and discounts, investors could potentially forecast potential gains in the market.

Liquidity

Liquidity refers to how easily shares can be bought or sold without moving the market price. Securities with high trading volumes tend to be more liquid. ETF liquidity should be evaluated relative to both the ETF shares and the underlying securities the ETF holds. Liquidity helps determine the price of ETF shares given that liquid shares have their prices displayed every 15 seconds compared to illiquid shares whose pricing is prone to fair valuation due their thin markets. Liquidity is crucial for the efficiency of ETFs as hedging tools and for arbitraging that makes capital markets vibrant (Ben-David, Franzoni, and Moussawi 2012).

Bid-ask Spread

When buying or selling ETF shares on the secondary market, a difference occurs between the highest price a buyer is willing to pay for an ETF share (the *bid*) and the lowest price a seller will accept to sell an ETF share (the *ask*). As a result, an investor will buy ETF shares for slightly over market price and sell for slightly less. Bid-ask spreads are smaller for larger ETFs in which the market has many buyers and sellers, resulting in less volatility and greater liquidity compared to smaller ETFs tracking niche markets.

15. Exchange-Traded Funds Performance Outlook

Global ETF assets grew to \$1.76 trillion during 2012 registering close to 30 percent growth. About 18 percent of the growth came from new cash flows (\$249 billion), while the remaining 11 percent came from asset price increases. The U.S. ETF market led global growth with record inflows of \$174 billion in 2012. The United States, Europe, Asia-Pacific, and Rest of the World regional ETF asset and respective growth rates ended 2012 with \$1.21 trillion (+29 percent), \$333 billion (+24 percent), \$136 billion (+50 percent), and \$72 billion (+29 percent), respectively. In the United States, ETFs continue to take market share away from mutual funds, especially in equities. Since 2006, mutual funds have seen more than \$400 billion in outflows while ETFs have seen more than \$500 billion in inflows in the equity space (Deutsche Bank 2013). ETFs appear to be a panacea to mutual fund drawbacks involving market timing, late trading, fair valuation, and hidden fees and expenses because ETFs offer flexibility, efficiency, lower cost, a tax advantage, and an array of investment options.

Among ETF providers, fierce competition has ignited a price war with multiple remedial actions. Trading activity picked up in 2013 with ETF turnover levels registering a rise of 9.5 percent over 2012. Overall, annual ETF turnover in 2013 and 2012 has been \$15.7 trillion and \$14.3 trillion, respectively. In 2013, Asia-Pacific region ETFs recorded the highest increase of 103 percent in trading volumes at \$601 billion, a rise of 9.5 percent compared to the other three geographical regions. U.S. ETFs continue to dominate the global ETF trading activity at \$14 trillion, representing a rise of 7.7 percent over the previous year (Deutsche Bank 2013).

In the United States, ETFs outperformed mutual funds in the race for assets in their home turf. In a year with low volatility levels and lower pair-wise correlations among equities supposed to benefit active management, ETFs grew faster and gathered more new assets than mutual funds for both equity and fixed-income products. For many years, some viewed ETFs as disruptors of the traditional asset management industry. However, recent developments suggest that the perception of these products is changing and the industry participants have begun to appreciate the evolution of the fund industry rather than disruptors of the same.

The U.S. ETF market experienced remarkable asset growth of 30 percent during 2013 with strong inflows of \$190.6 billion, representing a 15.7 percent rise over 2012. In contrast, the mutual fund industry assets grew by 17.3 percent experiencing positive flows of \$174 billion,

a rise of 1.7 percent over 2012. The fact that ETFs grew at a faster rate and gathered more new assets than mutual funds is even more notable considering that 2013 was one of the biggest equity bull markets in 25 years with the S&P 500 index increasing by 32 percent. Furthermore, lower pair-wise correlation and volatility should have benefited mutual-fund-related practices such as stock picking and active management. Within the fixed-income space, ETFs recorded the first major win over mutual funds. ETFs had received \$10.5 billion of new assets as of the end of November 2013, while mutual funds had recorded outflows of \$57.9 billion in the same period (Lan, Mercado, and Rajendra 2014). This difference shows the level of acceptance ETF products are gathering within investors' fixed-income portfolios.

As a result many traditional asset managers are implementing or fine-tuning their entry strategies into the ETF industry. The following are some of those strategies.

Launch an ETF Suite.

This process requires setting up operations including legal, portfolio management, marketing, sales, and capital markets. This alternative represents a major commitment of resources and may be appropriate for those companies that see ETFs as a core area of their future strategy. Examples of those adopting this strategy include PIMCO in 2009 and Franklin Templeton and Fidelity both in 2013 (Lan et al. 2014).

Acquire an ETF Issuer.

Because adopting this strategy involves a substantial business commitment to the new entrant, it is suitable to fund companies seeking ETFs as a core part of their future business strategy. BlackRock used this strategy to buy iShares in 2009 as did INVESCO with the purchase of PowerShares in 2006 and Guggenheim with the purchase of Claymore in 2009 and Rydex in 2010 (Lan et al. 2014).

Partner with an Existing ETF Issuer.

This strategy takes the form of a co-branded ETF issued under one of the ETF issuer's fund families with the asset manager specialist as a sub-adviser to the ETF. The new ETF sponsor links up with an existing fund issuer investing in various markets tracking different indexes with a track record of more than three years. This enables potential investors to capitalize on the track record as material information to their asset allocation. An asset manager specialist helps pick the underlying securities either by direct replication or synthetically until the new ETF gains clients' confidence after a minimum of three years when most rating bodies such as Morningstar could rate the ETF's performance.

The ETF provider addresses all of the capital markets requirements such as identifying the fund's target benchmark, the number of shares to equate to a creation unit, and dissemination of daily fund NAV as well as marketing activities while the asset manager oversees the portfolio management of the fund. This strategy involves less commitment than acquiring a whole business, but it still provides a foothold in the ETF market. The strategy is appropriate for firms looking for additional distribution channels for their already successful strategies especially with new asset classes. Blackstone/GSO implemented this strategy when it partnered with State Street in 2013. Other examples include Legg Mason's Western Asset Management partnering with Wisdom Tree in 2012, TCW Group partnering with Emerging Global Advisors in 2014, and MFS Investment Management partnered with State Street Global Advisors in 2014.

Non-Transparent Active Etf

This strategy is still in its exploratory phase with pending regulatory hurdles to cross. It offers a venue to fund managers to evaluate a transition/replacement strategy without full commitment to ETFs. Examples of firms exploring this path at the time of this writing include BlackRock, Eaton Vance, and T. Rowe Price. The global investment arena is geographically divided into four regions: the United States, Europe, Asia, and Rest of the World. Asia had the largest number of new ETF launches of the four regions with 14, followed by the United States with five, the Rest of the world with four, and Europe with three launches. In 2012, three new providers; Alpcot Capital Management, Swedbank Robur, and Vanguard—made their debut in the European market with one, three, and five products, respectively. Vanguard entered the European market offering low-cost products to investors translating into higher competition to the existing providers.

During 2012, five new providers entered the U.S. market, each offering one to three products. Horizon Management entered the Asian ETF industry because of its acquisition by Mirae Asset MAPS Global Investments in 2012. Also, 13 new providers launched 19 products in the ETF markets across Asia in 2012. All 13 providers launched one product each except Enhanced Investment Products Ltd., which entered the market with seven launches. Four new ETF providers—Caixa, Grindrod Bank, IMTrust, and Royal Canadian Mint—entered the rest of the world market with one product each during 2012. At a global level, five providers left the ETF industry in 2012. In the United States, FocusShares delisted its ETF range of 15 products and exited the industry. Russell Investments shut down all but one of its ETFs in

2012. JP Morgan and Marshall Wace LLP left the European ETF markets with delisting their complete range of products.

In Asia, AMP and China International Capital were among the providers who left the industry in 2012 (Deutsche Bank [2013](#)).

Low-Cost Indexes

An important development in the cost-cutting race has been the trend to move to lower cost indexes as product underlying implying that the value of the index chosen determines the value of the basket of securities transacted. Such a move leans more toward core allocations with no front load charges than satellite allocations with front loads charges. Multiple ways are available to move away from branded and relatively more expensive benchmarks including self-indexing, boutique index providers, and partnerships.

Self-Indexing

Some ETF providers such as WisdomTree, Market Vectors, and Index IQ have opted to develop their own benchmarks for their products. With internal development, all functions are performed in-house. The index division of the ETF provider manages the methodology, construction, calculations, index maintenance, and reconstruction.

Boutique Index Providers

Other providers such as EGShares and Global X Funds use smaller index providers such as Indxx. Indxx Super Dividend U.S. Low Volatility Index is a 50 stock equal-weighted index designed to follow the market performance of companies in the United States that have a high dividend yield and low beta and structured solutions. In this case, most of the index-related tasks are outsourced to the index provider, although the genesis of the benchmark can often involve the ETF provider.

Partnerships

Partnerships are structured in a similar manner as boutique index providers, with the only difference being that partnerships involve larger index institutions and in most cases a tailored index. The ETF provider usually initiates the index generation process by approaching the index provider with a methodology that needs to be turned into an index. Beyond this point, the index provider handles all other index-related tasks. Examples of partnerships include those between Vanguard and CRSP and First Trust and NYSE Euronext. Low-cost indexing offers lower costs to investors. A less known benchmark would usually

have a lower pool of passive assets tracking it. Therefore, any rebalancing activity would have less impact on the underlying securities, which benefits investors in the passive product by reducing the number of active players that could be tempted to front run the passive fund.

16. Summary and Conclusions

An ETF is a pooled investment vehicle with shares tradable throughout the day on a stock exchange at a market-determined price. These funds follow a wide range of strategies including equities, fixed-income, and commodities with most of them being index-based through either physical or synthetic replication. Physical replication uses security weighting through market capitalization or dividends. In the United States, ETFs are regulated under the Investment Company Act of 1940, which allows oversight by an independent board of directors and requires that fund assets be held separately from the assets of the fund adviser.

ETFs allow large broker dealers called APs to create and redeem their shares in large blocks of 50,000 to 100,000 (creation units) in exchange for cash or a basket of securities along with transaction charges and subsequently sell the shares in secondary markets. These actions of buying and selling of shares between APs and ETFs create arbitrage opportunities in the market thereby harmonizing market-determined ETF share prices and the market value of their underlying securities.

Trading ETF shares occurs through market orders and/or limit orders with the evaluation of which ETF to purchase being multi-functional on performance, tracking difference, costs, premiums and discounts, liquidity, and the bid-ask spread. The three largest ETF families in 2013 based on AUM are BlackRock, State Street Global Advisors, and Vanguard. The future of ETFs appears bright as more retail investors join their institutional counterparts in embracing these vehicles due to the enhanced transparency, tax efficiency, and diversified market exposure that they offer investors. The SEC has eased the process of launching new ETFs even as it allows ETFs to access the 401(k) funds, which previously were the preserve of mutual funds. Mutual funds are also joining these innovations by targeting the actively managed ETF market for liquidity, low costs, and flexibility purposes as less exotic indexes reduce tracking error.

17. References

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